

**Patent Claims**

1. Method for three-dimensional identification of objects (7), whereby
  - a digital micro mirror arrangement (3) is illuminated by a light source (1);
  - the digital micro mirror arrangement (3) is driven such that a plurality of encoded illumination patterns are successively projected onto the object surface (7), and, using a variable color filter in the beam path (8), the object is sequentially illuminated with at least three different colors and, thus, at least three depth planes can be identified in a single image;
  - the object (7) illuminated in this way is registered with a color camera (6) from a direction different from the illumination direction and the topography of the object (7) is calculated therefrom with high precision in a control and evaluation unit (11). *A*
- 10 2. Method according to one of the preceding claims [sic], whereby the encoding is composed of a stripe pattern whose periodicity is successively varied.
- 15 3. Method according to one of the preceding claims that is used for face identification.

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A shaped encoding 10 is solved with the employment of a digital micro mirror arrangement 3. The time span for the complete and dependable acquisition of an object 7 such as, for example, a face can thus occur in approximately 0.1 seconds. Approximately 1 seconds was previously required.

5 Three characteristics of a face are shown by way of example in Figure 2, these being either characteristic for the face by themselves or from which even more detailed features are derived. On the basis of these and similar recognition features, faces can be distinguished with higher dependability than with two-dimensional methods currently utilized.

10 Figure 2 shows three possibilities of definitions of specific characteristics of a face on the basis of the spatial coordinates x, y and z. The upper diagram A shows a line or, respectively, contour of the face <sup>in</sup> the brow region in a plane lying perpendicular to the y-axis. The same is true of the lower diagram in Figure 2, whereby the nose area is involved here. The middle of the three-diagrams in 15 Figure 2 represents a line that is located in a plane perpendicular to the x-axis. Accordingly, a lateral profile of the face is reproduced here. The mark  $Z_{min}$  thereby indicates, for example, the position of the tip of the nose relative to the face profile.

*This is a 37*